SMC

Compact Manometer

Series PPA

A pressure measuring instrument with exceptional portability.

Pressure measurements can easily

Compact and light weight
Portable type with a light weight of only about 100g
(unit 50g, battery 50g) can also be held in the palm of the hand.

Measurement unit switching for global use
Freely selectable measurement display and easy unit conversions
also make it ideal for the SI unit transition period.

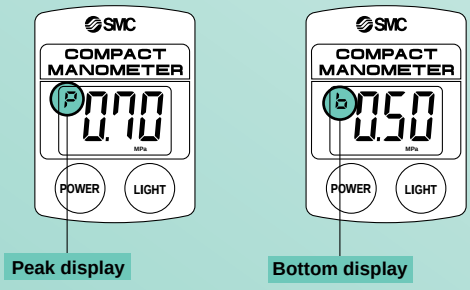
Back light for easy viewing in dark locations

Long life of 12 months continuous operation
One year of continuous operation is possible with 2 type AA batteries (3V).

Convenient hand strap for carrying
Keeping practical use in mind, the hand strap is a standard feature.

Zero/span calibration is possible
Offset adjustment with the zero clear function, and span
calibration with the trimmer can be performed.

Peak/bottom hold function
With pressure being displayed, variations in supply pressure can be
grasped instantly with one touch switching of the display from peak value to bottom value.



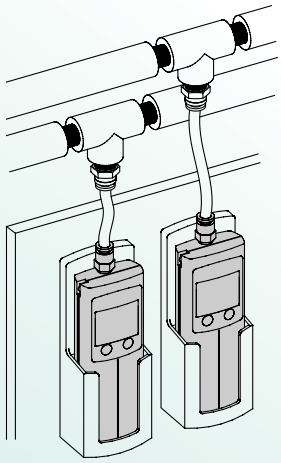
Auto power off function to save batteries
Power turns off automatically if not operated for more than 5 minutes.

Case holder is available
The case holder is provided as an option to allow for situations where portability is not required.

be taken any time, anywhere.

Application examples

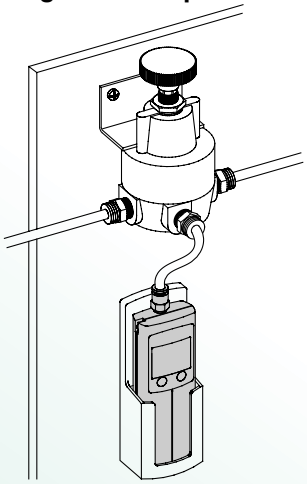
Confirmation of air line source pressure



Human reading error is eliminated by the ability to confirm line pressure on the digital display.

It is also possible to check pulsation in the source pressure using the peak/bottom display function.

Confirmation of regulator set pressure



Setting of a regulator can be performed more precisely than with a dial gauge by viewing the digital display while making the setting.

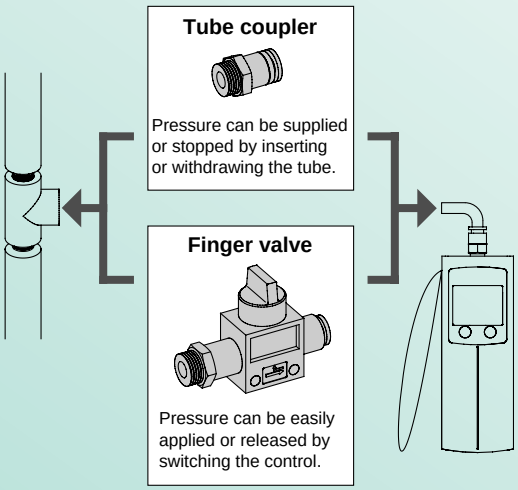
Furthermore, power lines are not needed for this battery operated unit.

Compact Manometer

Series PPA

Related products for line pressure measurement

Convenient for easy line pressure measurement without removing piping or stopping supply pressure, etc.



Refer to page 5 for specifications.

Can also be used as an energy saving related device

■ **Measures the total pressure received by an air blown work piece**

Used in combination with the pressure probe (IN-442-5), total pressure can be easily measured.

Compact Manometer

Series PPA

PPA100·101·102

How to Order

PPA10 **0** □ □

Pressure specification

0	– 0.1 to 1MPa(for high pressure)
1	– 101 to 10kPa(for vacuum)
2	– 10 to 100kPa(for low pressure)

Option/Case holder

Nil	Without case
B	With PPA-B

One-touch fitting type

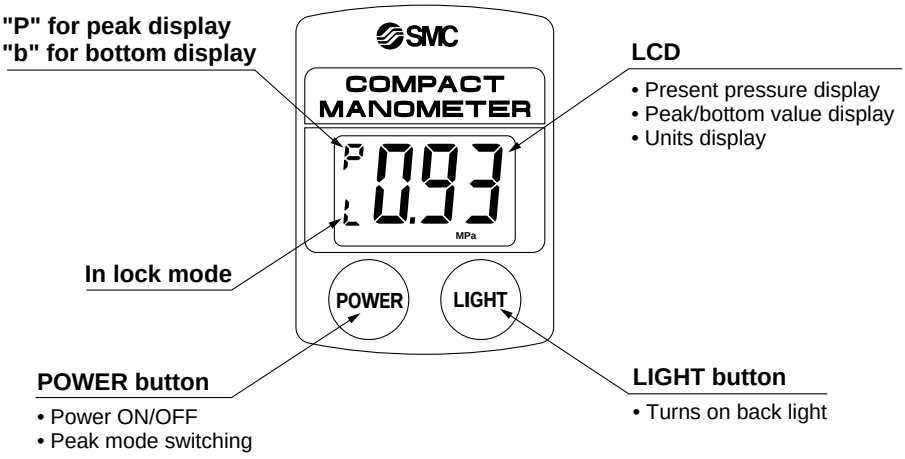
Symbol	Applicable tube size	One-touch fitting	Applicable tube material
Nil	N/A	N/A	N/A
04	ø4 (mm size)	KJH04-M5	Nylon Soft nylon Polyeurethane
06	ø6 (mm size)	KJH06-M5	

Specifications

Model		**PPA100 for high pressure**	**PPA101 for vacuum**	**PPA102 for low pressure**
Rated pressure range		-0.1 to 1MPa	-101 to 10kPa	-10 to 100kPa
Pressure display		3 digit LCD with back light		
Pressure display discrimination		1/100		
Minimum display units	**kPa**	–	1	1
	MPa	0.01	–	–
	mmHg	–	5	–
	kgf/cm²	0.1	0.01	0.01
	inHg	–	0.2	–
	PSI	1	0.1	0.1
	bar	0.1	0.01	0.01
Error display		Over pressure, Memory data error, Change battery sign		
Functions		Peak/bottom display, Back light, Auto power OFF Zero clear, Units display switching		
Withstanding pressure		1.5MPa	200kPa	200kPa
Fluids		Air, Non-corrosive gases		
Power supply		3V(DC), type AA dry cell x 2 pcs.		
Battery life		12 months continuous operation (without back lighting)		
Response speed		250ms		
Display accuracy		±2% F.S. or less (temperature conditions: at 25°C)		
Repeatability		±1% F.S. or less (temperature conditions: at 25°C)		
Temperature characteristics		±3% F.S. or less (0 to 50°C, with 25°C standard)		
Piping port		M5 x 0.8		
Ambient operating temperature		0 to 50°C (with no condensation)		
Ambient operating humidity		35 to 85% RH (with no condensation)		
Shock resistance		100G in X, Y, Z directions, 3 times each		
Enclosure		IP40 (IEC standard)		
Weight		Approx. 100g(unit 50g, batteries 50g)		

Note) 2 pcs. of type AA dry batteries (manganese R6 or alkaline LR6) are not included.

Description of Operating Parts



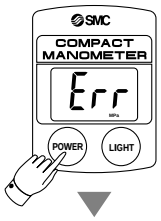
Operation and Functions

(PPA100 shown. Units: MPa)

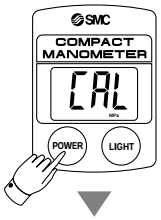
Initial Setting

Be certain to perform initial setting when using for the first time and after changing batteries, as the unit will indicate memory data error.

1. Press and hold the POWER button for 3 seconds or more.



2. Press and hold the POWER button for 6 seconds or more.



3. Release the POWER button.

1. The display will show "Err" and then the power should be turned OFF.
2. Press and hold for 6 seconds or more. The unit will go into zero clear. When this happens, "CAL" will appear on the LCD.
3. When zero clear is finished, the unit can be operated.

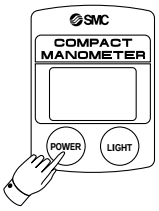
Power ON

Press the POWER button.

- The power comes ON as it is pressed.
- When pressed and held for 6 seconds or more, the unit goes into zero clear.

Power OFF

Press and hold the POWER button for 3 seconds or more.



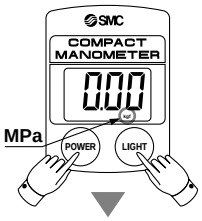
- When pressed and held for 3 seconds or more, the power turns OFF.
- When there is no button operation for more than 5 minutes, the power turns OFF. (auto power OFF function)

Operation and Functions

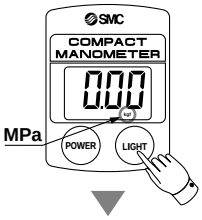
(PPA100 shown. Unit: MPa)

Unit Display Switching

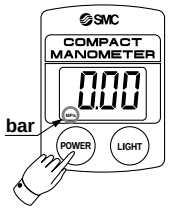
1. Press and hold the POWER and LIGHT buttons for 3 seconds or more.



2. Press the LIGHT button.



3. Press the POWER button.



1. When pressed continuosly for 3 seconds or more, the unit on the LCD will flash.

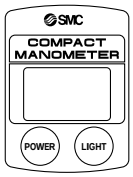
2. The unit will change. (See the table below.)

3. The unit is set, and switching is finished.

High pressure (PPA100)	Vacuum (PPA101)	Low pressure (PPA102)
MPa→bar →PSI→kgf	kPa→bar→PSI →inHg→mmHg	kPa→bar →PSI→kgf

Note) The "inHg" unit cannot be displayed.

Auto Power OFF Function

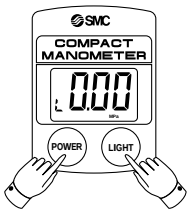


When the power is turned ON and there is no button operation for more than 5 minutes, the power will turn OFF.

Note) For canceling this function, refer to the functions and operation of the lock mode (below).

Lock Mode (Auto Power OFF Cancel)

Press and hold the POWER and LIGHT buttons for 6 seconds or more.



The auto power OFF function is canceled by activating the lock mode (auto power OFF cancel).

When continuously pressed for 6 seconds or more, "L" is displayed on the LCD.

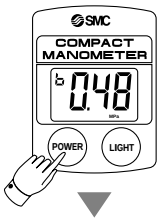
Moreover, when the power is turned OFF, the lock mode is released.

Peak/Bottom Display

Note) Since this is combined with power OFF operation, the button should be released at the point when "P" or "b" is displayed.

Press the POWER button.

Press the POWER button.



Press the POWER button.

Do this when pressure is being displayed.

Peak Display

Displays the maximum pressure value and "P" appears on the LCD. The display will change if pressure increases beyond the pressure value that is being held.

Bottom Display

Displays the minimum pressure value and "b" appears on the LCD. The display will change if pressure falls below the pressure value that is being held.

(These modes are convenient for confirming pressure fluctuations.)

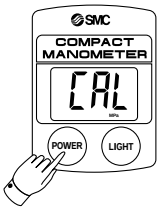
Turning On the Back Light

Press the LIGHT button.

It normally lights up while the button is being pressed. In the lock mode, it lights up when pressed and turns off when pressed again. However, the maximum lighting time is approximately one minute.

Zero Clear

Press and hold the POWER button for 6 seconds or more.

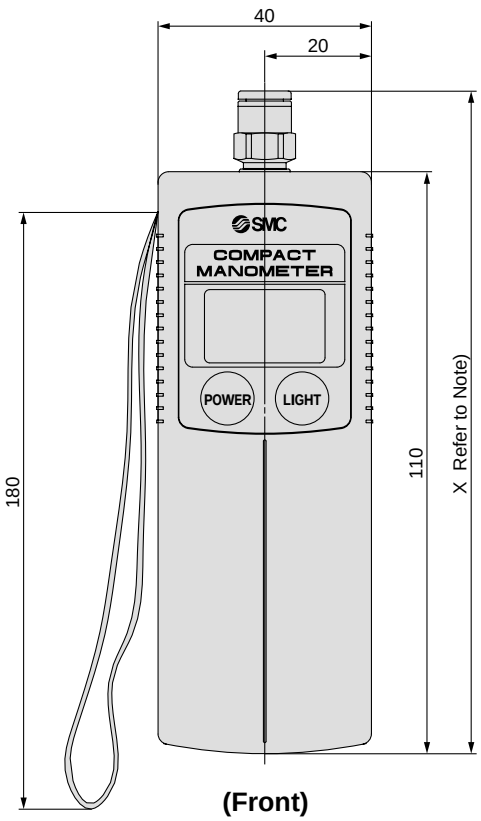


The zero point displayed at atmospheric pressure can be automatically adjusted. By this means it is possible to eliminate a display discrepancy at atmospheric pressure.

- Turn the power OFF.
- Release the supply pressure to the atmosphere.
- When continuously pressed for 6 seconds or more, zero clear is performed and "CAL" is displayed on the LCD.

Dimensions

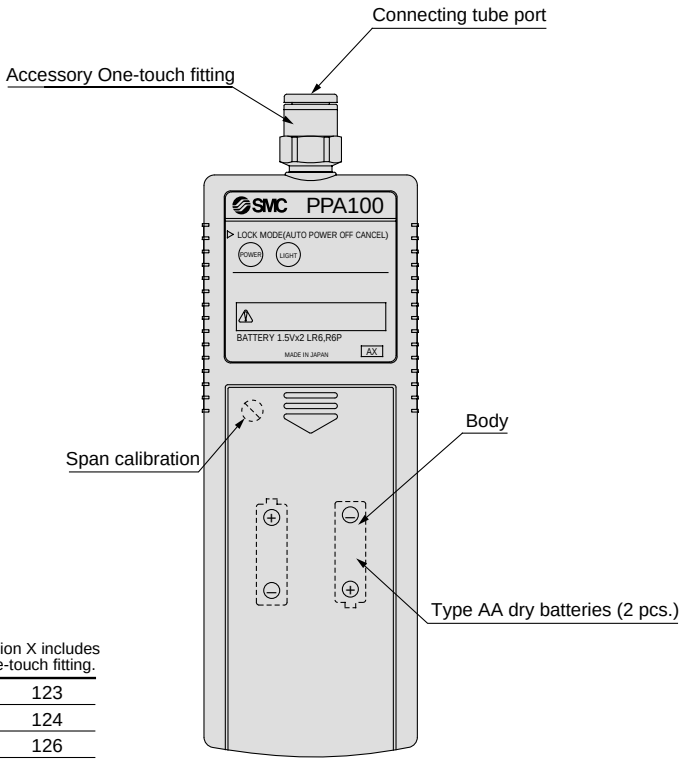
Scale: 70%



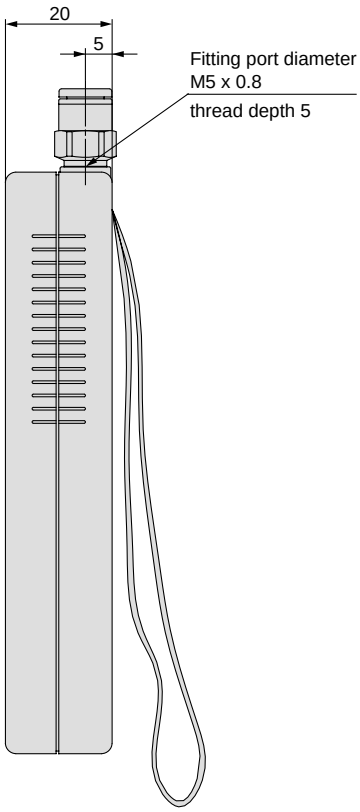
Note) Dimension X includes the One-touch fitting.

ø4	123
ø6	124
ø1/4"	126

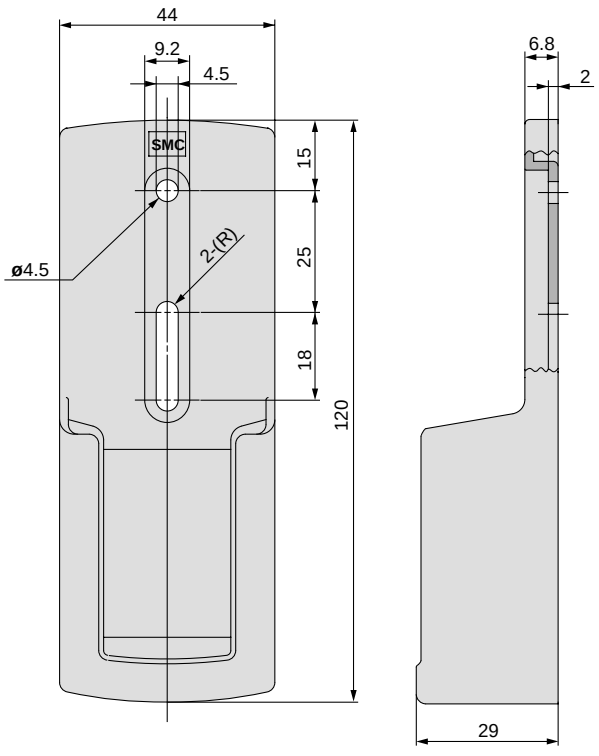
(Front)



(Back)



Option/Case holder



Error Correction

When errors occur, they should be corrected as shown below.

Display	Nature of error	Corrective action
- - -	Pressure being applied is above the rating.	Operate within the rated pressure range.
Err	Memory data has probably been corrupted in some way.	Perform auto zero adjustment.
Entire display flashes	Battery voltage is low.	Replace the batteries.

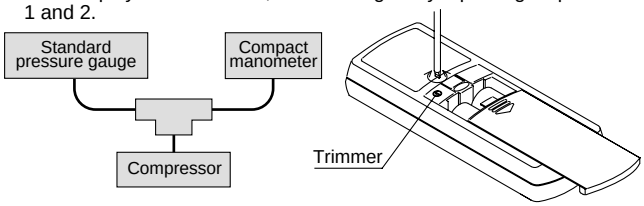
Maintenance

• Span calibration method

⚠ Caution

Do not touch the span calibration trimmer except when performing span calibration.

1. Perform zero clear at atmospheric pressure.
2. Apply the maximum rated pressure, and calibrate the span while comparing with a standard pressure gauge.
3. If the display value of the compact manometer is "0" after returning to atmospheric pressure, then calibration is complete.
   If the display value is not "0," calibrate again by repeating steps 1 and 2.



• Replacing the batteries

When battery voltage becomes low the entire LCD will flash.
When the LCD flashes replace the batteries. Use 2 pcs. of type AA dry batteries.

⚠ Caution

To replace the batteries, turn the power OFF and replace them within approximately 30 seconds.
When not completed within 30 seconds, "Err" will be displayed. In that case, perform zero clear once again.

In the event that the display runs out of control, remove the batteries for one minute or longer, and then perform zero clear again after inserting the batteries and turning on the power.

Related products useful for line pressure measurement

These products are convenient for measuring line pressure easily without the need to remove piping or stop supply pressure, etc.

Switching between pressurization and atmospheric release can be easily performed by switching the control.

Finger Valve
Series VHK

Specifications

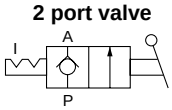
Valve type	2 port valve, 3 port valve
Fluid	Air
Proof pressure	1.5MPa{15.3kgf/cm^2}
Maximum operating pressure	1.0MPa{10.2kgf/cm^2}
Operating vacuum pressure Note 1)	-100kPa{10 Torr}
Ambient and fluid temperature	0 to 60°C
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyeurethane
Accessory (option)	Bracket

Note 1) For a vacuum application use VHK2 (2 way valve).

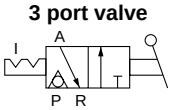
Note 2) Use caution with soft nylon and polyeurethane at the maximum operating pressure. (For further details, refer to catalog CAT.E501-(B), "Fittings & Tubing for Pneumatic Piping.")

JIS symbols

2 port valve



3 port valve



Pressure can be supplied or stopped by inserting or removing a tube.

Tube Coupler
Series KC

Applicable tubing

Tubing material	Nylon, Soft nylon, Polyeurethane
Tubing outside diameter	ø4, ø6, ø8, ø10, ø12

Specifications

Fluid		Air
Maximum operating pressure		1.0MPa{10.2kgf/cm^2}
Proof pressure		3.0MPa{30.6kgf/cm^2}
Ambient and fluid temperature		0 to 60°C
Thread	**Mounting**	JIS B0203 (taper thread for piping)
	Nut	JIS B0211 Class 2 (metric fine screw thread)
Thread seal		With seal (standard equipment)
Adaptor for copper family incompatible parts		Part C3604BD (electroless nickel plated)

Principal part materials

Body	C3604BD, PBT
Stud	C3604BD (thread)
Chuck spring	SUS304
Guide	C3604BD, POM
Collet release bushing	POM
Valve retainer	POM
Stopper	C3604BD, POM
Seal O-ring	NBR

Series PPA
Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of **"Caution", "Warning" or "Danger"**. To ensure safety, be sure to observe ISO 4414 Note 1), JIS B 8370 Note 2) and other safety practices.

⚠ Caution : Operator error could result in injury or equipment damage.

⚠ Warning : Operator error could result in serious injury or loss of life.

⚠ Danger : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414 : Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems.

Note 2) JIS B 8370 : Pneumatic system axiom.

⚠ Warning

1 The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.

2 Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3 Do not service machinery/equipment or attempt to remove component until safety is confirmed.

1.Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.

2.When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.

3.Before machinery/equipment is re-started, take measures to prevent shooting/out of cylinder piston rod etc. (Bleed air into the system gradually to create back-pressure.)

4 Contact SMC if the product is to be used in any of the following conditions:

1.Conditions and environments beyond the given specifications, or if product is used outdoors.

2.Installation on equipment in conjuction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.

3.An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

Series PPA
Specific Product Precautions

Be sure to read before handling.
See page 6 for safety precautions.

Handling Precautions

⚠Warning

1. The compact manometer can be used for measurement of air and non-corrosive gases.

Please note that the accuracy of measurement for other fluids cannot be guaranteed. Furthermore, the construction is not explosion proof, and therefore , flammable gases should not be used.

2. Be certain to stay within the rated pressure range.

Operation outside the pressure range will cause failure.

3. Do not intentionally swing around by the hand strap.

If the strap breaks or comes loose, there is a danger of injury or damage, etc.

4. When installing or removing One-touch fittings on tubing, first confirm that the fluid to be measured is at atmospheric pressure.

If tubing is disconnected while the fluid to be measured is in a pressurized state, the tubing may jump causing a danger of injury or damage. Also when connecting tubing, confirm that it is securely attached.

5. Instruction manual.

Read the manual carefully and have a good understanding of its contents before using the product . Also keep it where it can be readily referred to as needed.

⚠Caution

1. Keep condensate and foreign matter from getting into the fluid to be measured.

If condensate or foreign matter is mixed in the fluid to be measured, this may cause failure or air leakage.

If there is a possibility of these being contained in the fluid, use the meter via a filter or mist separator.

2. Do not drop or strike the unit, etc.

Do not drop, strike or subject to a large impact shock (1000/s^2), as this may cause failure.

3. Be certain to perform the zero clear function with pressure released to the atmosphere.

When performing the zero clear function, this should be done with piping ports in an atmospheric release condition. If adjustment is performed at a pressure other than atmospheric pressure, the correct value will not be displayed.

4. Tighten One-touch fittings in accordance with the following.

One-touch fittings should first be tightened by hand, and then further tightened approximately 1/6 of a turn using a tightening tool. If screwed in too far, this may cause air leakage due to breaking of the threads or distortion of the gasket, etc. If not screwed in far enough, this may cause a loose fitting or air leakage, etc.

Operating Environment

⚠Warning

1. Absolutely do not use in an atmosphere of explosive gases.

The compact manometer does not have explosion proof construction. If used in an atmosphere of explosive gases, there is a possibility of causing an explosion, and therefore, should absolutely not be used under these conditions.

⚠Caution

1. Do not use where there is splashing of water or oil, etc.

The compact manometer is not a dust proof and drip proof type and should not be used where there is splashing of water or oil, etc., as this may cause failure.

Maintenance & Other

⚠Warning

1. Perform maintenance regularly.

If there is an unintended misaction, misoperation, etc., or calibration has not been performed, there is a possibility of an incorrect value being displayed, making it impossible to ensure safety.

2. Do not disassemble or modify the unit.

⚠Caution

1. Use manganese type AA dry batteries (R6) or alkaline type AA dry batteries (LR6).

Do not use batteries other than the above, as this may cause failure.

2. Insert the plus (+) and minus (-) terminals of the batteries in the proper direction as indicated inside the unit.

If the batteries are inserted incorrectly, this may cause them to leak or explode and result in damage to the unit.

3. Do not use old and new batteries or mix different types of batteries together.

This may cause batteries to leak and result in damage to the unit.

4. Remove the batteries when the unit will not be used for a long period.

5. Do not use batteries if their voltage has dropped.

Continuing to use them may lead to the display of incorrect values.

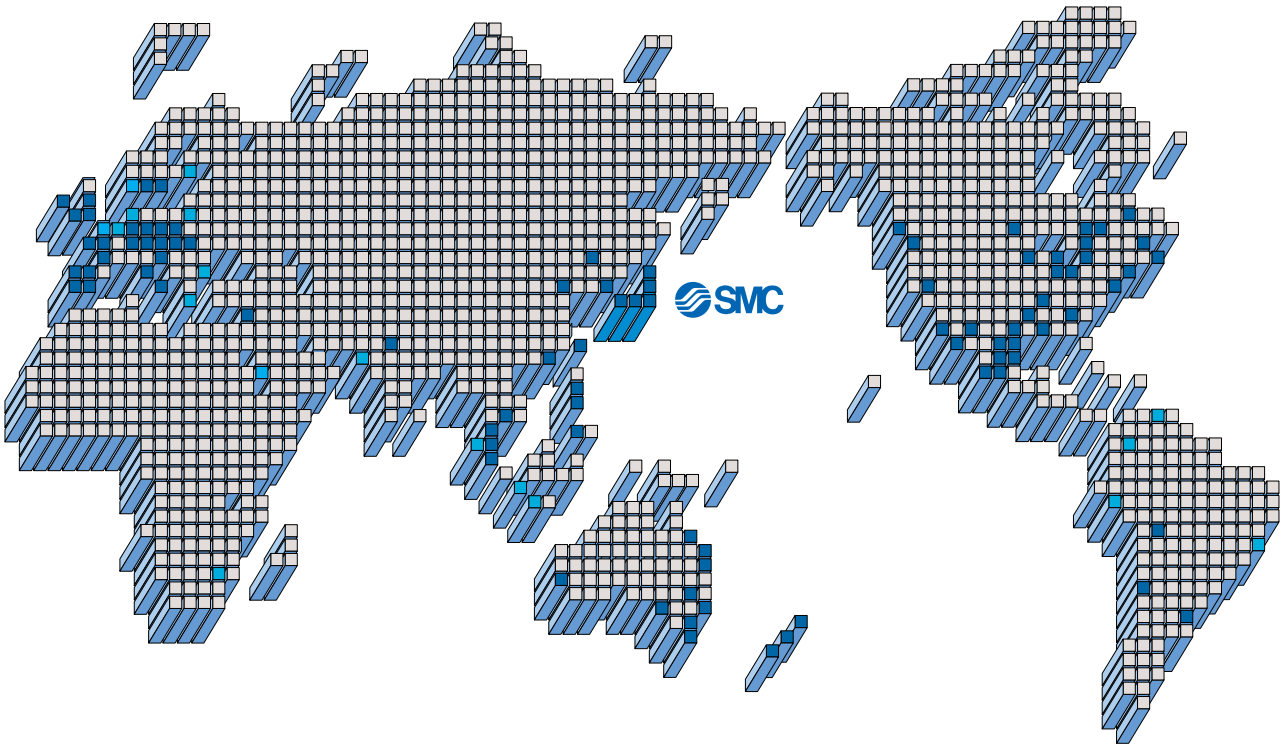
6. Do not touch the span calibration trimmer except when performing span calibration.

Touching the trimmer may cause generation of an error in the measured pressure. Also do not turn it too hard (0.3N•m or less) or press it too hard (5N or less).

7. Use a soft cloth to clean the case.

In case of heavy soiling, wipe it off with a cloth soaked in a neutral detergent diluted with water after wringing it out thoroughly, and finish up by wiping with a dry cloth.

SMC'S GLOBAL MANUFACTURING, DISTRIBUTION AND SERVICE NETWORK



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